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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andrew Robert Harvey

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07/28/2008

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EXAMINER

GEISEL, KARA E

ART UNIT

PAPER NUMBER

2877

MAIL DATE

DELIVERY MODE

07/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/511,502	Applicant(s) HARVEY ET AL.	
	Examiner KARA E. GEISEL	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-20 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

As a formal matter, it is noted that the preliminary amendment, filed October 15th, 2004 has been entered into this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4, 13, 15-16, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Law (USPN 3,497,283), as cited by the applicant.

In regards to claim 1, Law discloses an imaging spectrometer comprising; an imager for dividing a received image into two or more spatially separated spectral images (fig. 8, 20 and 10), and detector apparatus for detecting each spectral image (22 rgb; the detector apparatus is defined by the examiner as

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the entire set of cameras), wherein the imager comprises at least one polarizing beam splitter (10, specifically layer 13, and column 3, lines 6-31).

In regards to claim 2, the imager comprises an image replicator (20 and 10) to produce two or more spatially separated images (the arrows coming out of 20 and 10), and one or more filter elements (Frgb) which act to alter the spectral characteristics of one or more of the spatially separated images (column 3, lines 10-14).

In regards to claim 4, the filter elements are located in the vicinity of said detector apparatus or a conjugate plane thereof (as can be seen in fig. 8).

In regards to claim 13, each spectral image is composed of radiation within a different waveband (column 3, lines 10-14; red, green and blue).

In regards to claim 15, the detector comprises two or more detector arrays (22rgb).

In regards to claim 16, a separate detector array is provided to detect each replicated image (22rgb).

In regards to claim 18, the optical components of the imager are formed as a single compound optical element (as can be seen in fig. 8).

In regards to claim 20, Law discloses an imaging spectrometer comprising; imaging means for dividing a received image into two or more spatially separated spectral images (fig. 8, 20 and 10), and means for detecting each spectral image (22 rgb; the detector apparatus is defined by the examiner as the entire set of cameras), characterized in that the imaging means comprises at least one polarizing beam splitter (10, specifically layer 13, and column 3, lines 6-31).

Claims 1-2, 4-6, 9-14, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Greivenkamp (USPN 4,575,193), as cited by the applicant.

In regards to claims 1 and 20, Greivenkamp discloses an imaging spectrometer (figs. 1 and 2a) comprising; an imager for dividing a received image into two or more spatially separated spectral images

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(14), and detector apparatus for detecting each spectral image (12), wherein the imager comprises at least one polarizing beam splitter (16).

In regards to claim 2, the imager comprises an image replicator to produce two or more spatially separated images (20), and one or more filter elements (on 12) which act to alter the spectral characteristics of one or more of the spatially separated images (column 3, lines 55-61).

In regards to claim 4, the filter elements are located in the vicinity of said detector apparatus or a conjugate plane thereof (column 3, lines 54-61).

In regards to claim 5, the image replicator comprises two or more polarizing beam splitters (16 and 20) and additionally comprising optical retardation elements (18) located between the polarizing beam splitters (as can be seen in fig. 2a).

In regards to claim 6, the spectrometer comprises an input optical retardation element (18) to define the input polarization state of the image received by the imager (20; in this case the examiner interprets the imager as being element 20 only).

In regards to claim 9, the imager comprises one or more spectral replicator arranged in optical series (fig. 7a), each spectral replicator comprising an optical retardation element (56 and 58) and a polarizing beam splitter (50 and 52).

In regards to claim 10, one or more of the optical retardation elements provides a wavelength dependent polarization change (column 4, lines 27-35).

In regards to claim 11, the thickness of the one or more optical retardation elements is chosen to define the spectral properties of each spectral image (column 5, lines 32-49).

In regards to claim 12, four or more spatially separated spectral images are produced (as can be seen in fig. 2a).

In regards to claim 13, each spectral image is composed of radiation within a different waveband (in this case, red, green and blue).

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In regards to claim 14, the detector apparatus comprises a detector array, each replicated image being directed to a separate portion of the detector array (column 3, lines 51-56).

In regards to claim 18, the optical components of the imager are formed as a single compound optical element (as can be seen in fig. 1, 14).

Claims 1, 14, 17 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Schindler (US Pubs 2002/0030811), newly cited.

In regards to claims 1 and 20, Schindler discloses an imaging spectrometer (fig. 21) comprising; an imager for dividing a received image into two or more spatially separated spectral images (12), and detector apparatus for detecting each spectral image (14), wherein the imager comprises at least one polarizing beam splitter (12 and ¶ 142).

In regards to claim 14, the detector apparatus comprises a detector array (14), each replicated image being directed to a separate portion of the detector array (¶ 142).

In regards to claim 17, the polarizing beam splitter is a Wollaston prism (¶ 142).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

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to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Law (USPN 3,497,283), as cited by the applicant.

In regards to claim 3, Law discloses an imaging spectrometer, as discussed above. Law is silent to the filter elements being dichroic filter elements. However, which type of filter is used is merely a design choice, and furthermore, dichroic filter elements have the benefit of reflecting unwanted light instead of absorbing it, and therefore do not get as hot as some other filters. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to replace the filter elements of Law with dichroic filter elements, as a matter of design choice, and in order to keep the filters cool due to design, which would be beneficial since the filter's of Law are overlaying the detector array.

In regards to claim 19, Law discloses an imaging spectrometer, as discussed above. Law is silent to the imaging spectrometer comprising a field stop. However, the Examiner takes Official Notice, that field stops are very well known to be used in measurement devices. Specifically, a measurement device is usually contained within a housing, and a field stop is used to allow only light at a specific area of interest to enter the measurement device, so that no ambient or noise light will reduce the precision of the measurement. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to include into Law's imaging spectrometer, a field stop in order to allow only light at a specific area of interest to enter the measurement device, so that no ambient or noise light will reduce the precision of the measurement.

Allowable Subject Matter

Claims 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:

As to claim 7, the prior art of record, taken alone or in combination, fails to disclose or render obvious an imaging spectrometer wherein the optical retardation imparted by the input optical retardation element is variable, in combination with the rest of the limitations of claim 7.

As to claim 8, the prior art of record, taken alone or in combination, fails to disclose or render obvious an imaging spectrometer wherein at least one of the optical retardation elements have substantially wavelength independent retardation properties, in combination with the rest of the limitations of claim 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Kara E Geisel/
Primary Examiner,
Art Unit 2877**

July 28, 2008